FIG. 1

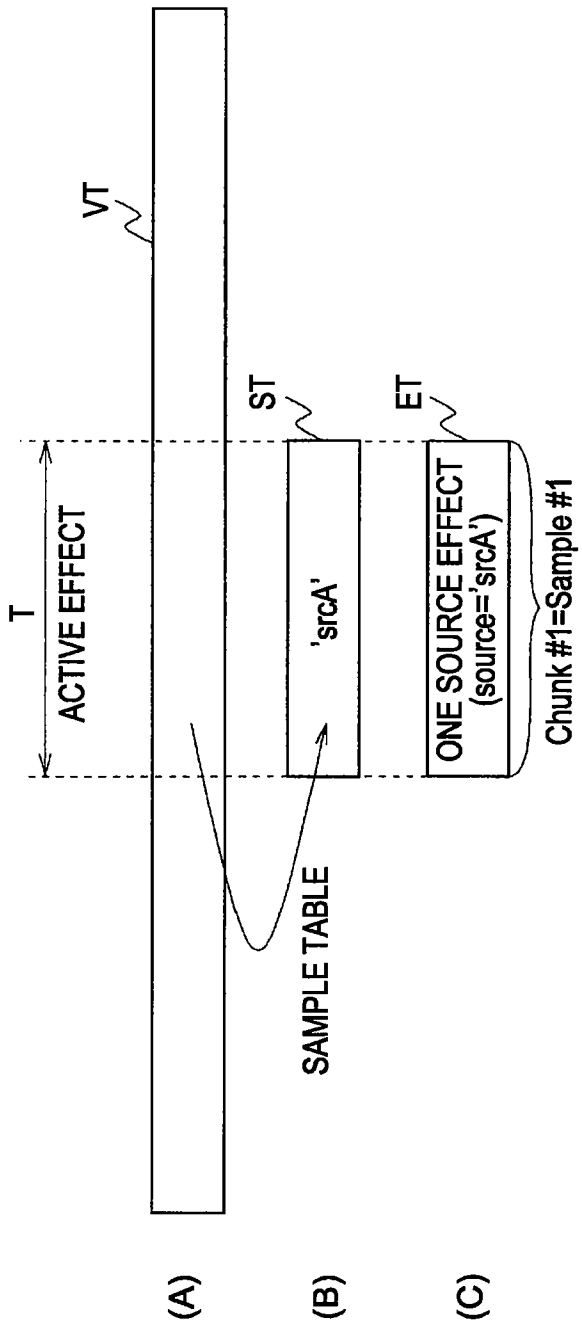

VT
ST
ET
T
ACTIVE EFFECT
'srcA'
ONE SOURCE EFFECT
(source='srcA')
Chunk #1=Sample #1
SAMPLE TABLE
(A)
(B)
(C)

FIG. 2

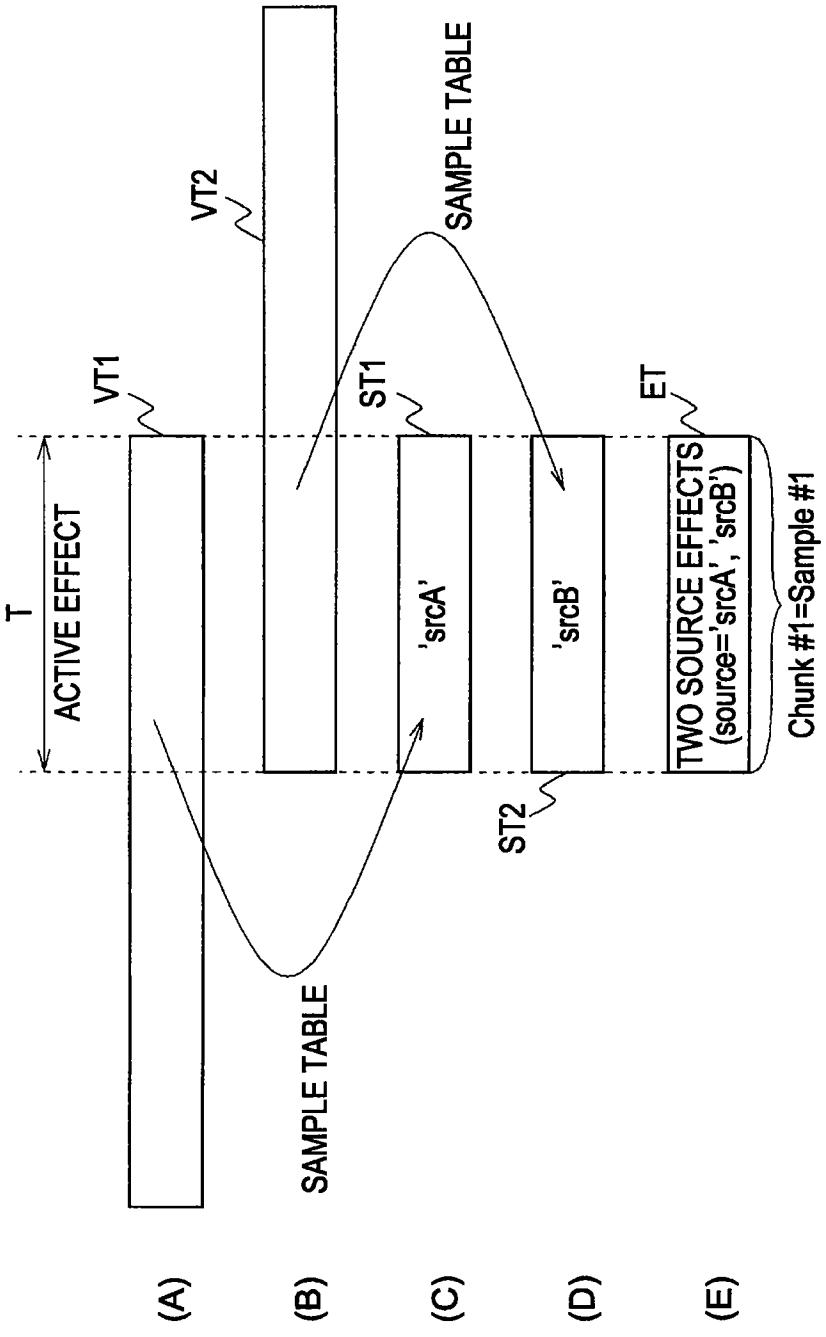

T
ACTIVE EFFECT
VT1
VT2
SAMPLE TABLE
ST1
'srcA'
'srcB'
ET
TWO SOURCE EFFECTS
(source='srcA', 'srcB')
Chunk #1=Sample #1
ST2
SAMPLE TABLE
(A)
(B)
(C)
(D)
(E)

FIG. 3

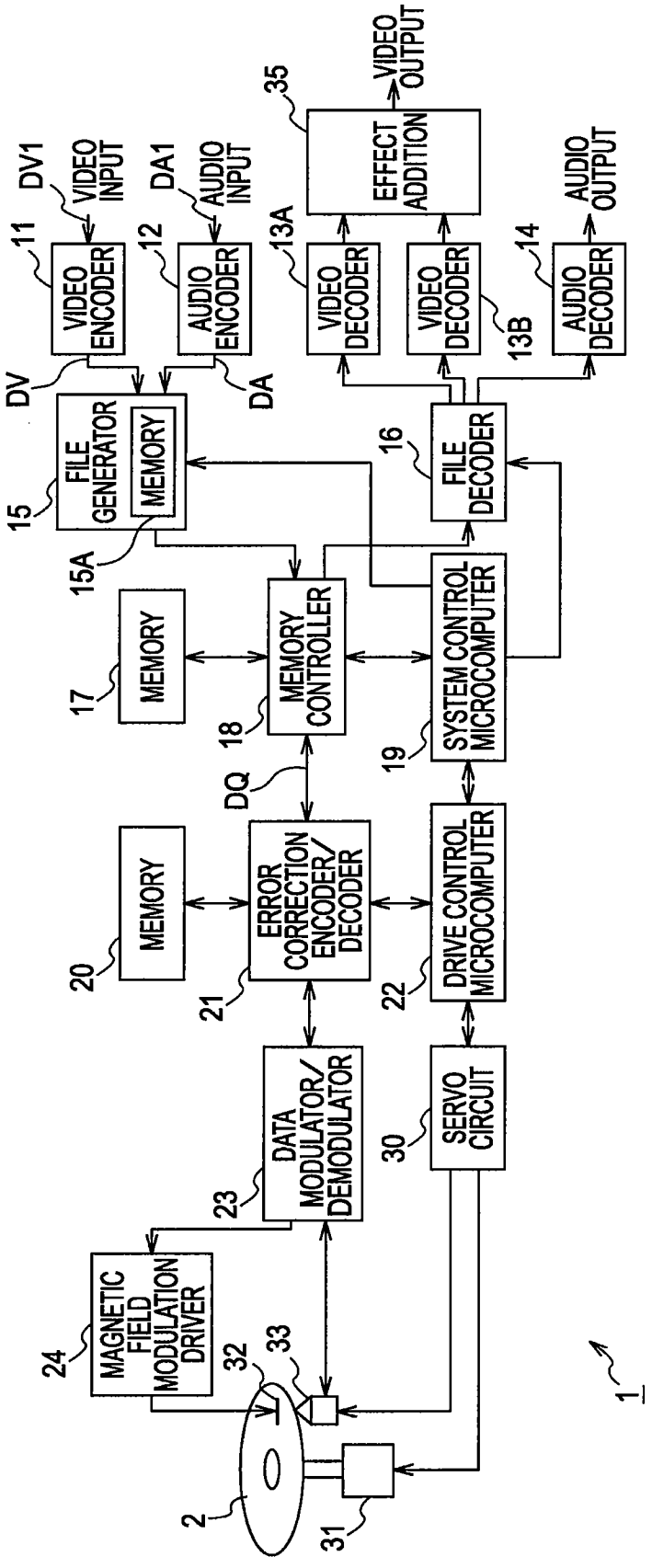

DV1
VIDEO INPUT
DA1
AUDIO INPUT
VIDEO OUTPUT
AUDIO OUTPUT
11
VIDEO ENCODER
12
AUDIO ENCODER
13A
VIDEO DECODER
13B
VIDEO DECODER
14
AUDIO DECODER
35
EFFECT ADDITION
DV
DA
15
FILE GENERATOR
MEMORY
15A
16
FILE DECODER
17
MEMORY
18
MEMORY CONTROLLER
19
SYSTEM CONTROL MICROCOMPUTER
DQ
20
MEMORY
21
ERROR CORRECTION ENCODER/ DECODER
22
DRIVE CONTROL MICROCOMPUTER
23
DATA MODULATOR/ DEMODULATOR
30
SERVO CIRCUIT
24
MAGNETIC FIELD MODULATION DRIVER
32
33
2
31
1

FIG. 4

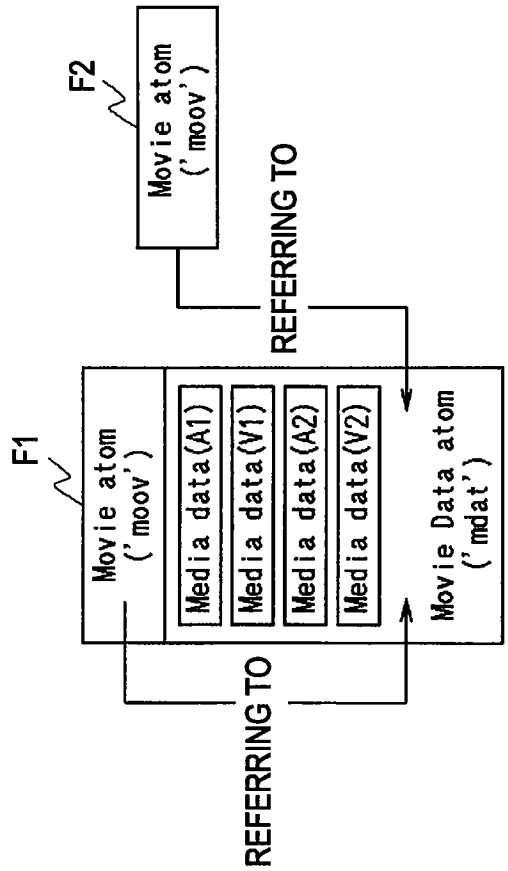

F2
Movie atom
('moov')
REFERRING TO
F1
Movie atom
('moov')
Media data(A1)
Media data(V1)
Media data(A2)
Media data(V2)
Movie Data atom
('mdat')
REFERRING TO

FIG. 5

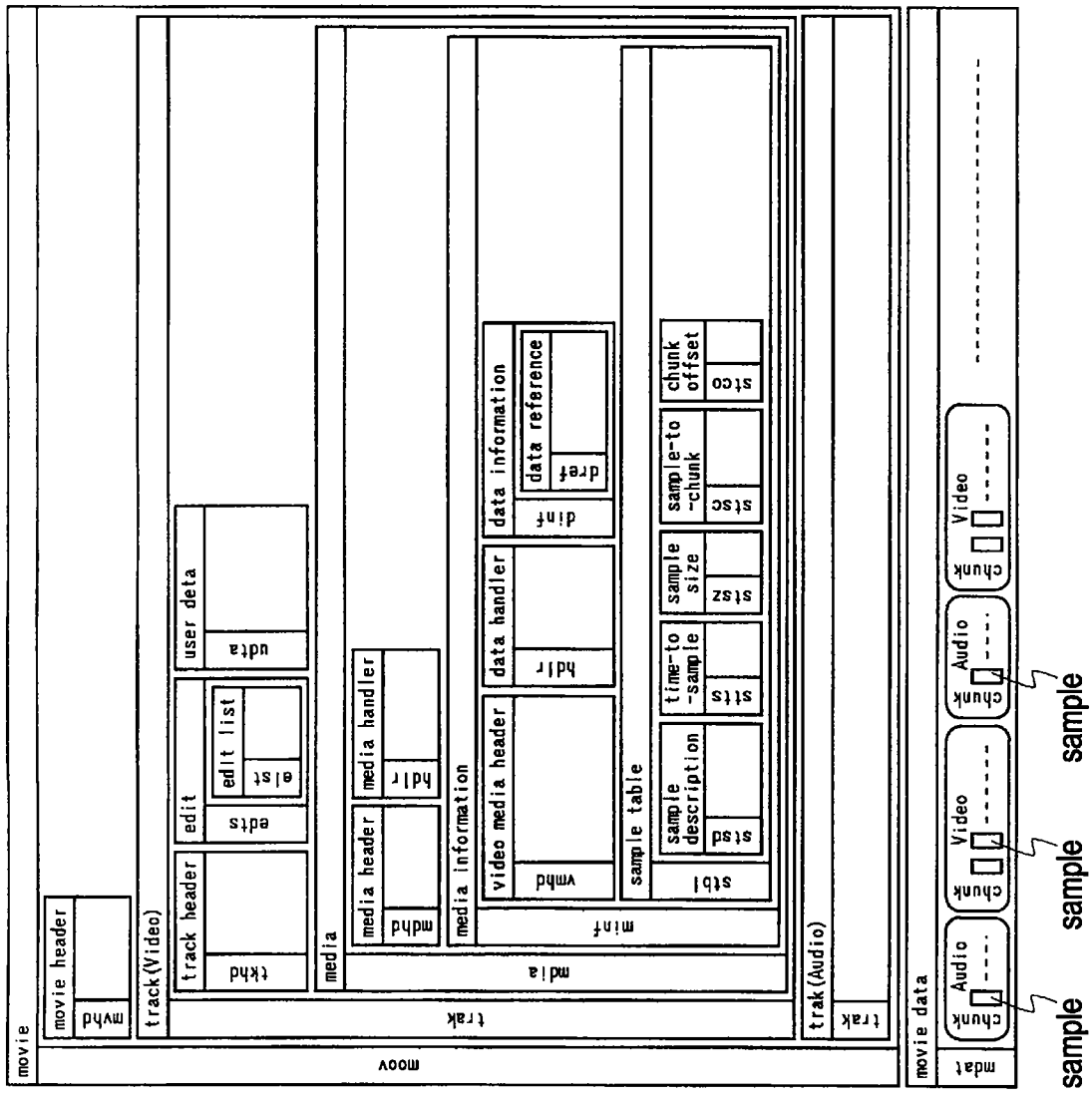

movie
mvhd
movie header
moov
track(Video)
tkhd
track header
edts
edit
elst
edit list
udta
user deta
trak
mdhd
media header
hdlr
media handler
media
vmhd
video media header
dinf
dref
data reference
data information
media information
hdlr
data handler
minf
stsd
sample description
stts
time-to -sample
stsz
sample size
stsc
sample-to -chunk
stco
chunk offset
stbl
sample table
trak(Audio)
trak
mdat
movie data
Audio
Video
Chunk
sample
sample
sample

FIG. 6

ATOM	TYPE NAME
Movie atom {	'moov'
Movie Header atom	'mvhd'
Track atom (video) {	'trak'
Track Header atom	'tkhd'
Edit atom {	'edts'
Edit List atom	'elst'
}	
Media atom {	'mdia'
Media Header atom	'mdhd'
Media Handler Reference atom	'hdlr'
Media Information atom {	'minf'
Video Media Information Header atom	'vmhd'
Data Handler Reference atom	'hdlr'
Data Information atom {	'dinf'
Data Reference atom	'dref'
}	
Sample Table atom {	'stbl'
Sample Description atom	'stsd'
Time-to-Sample atom	'stts'
Sample Size atom	'stsz'
Sample-to-Chunk atom	'stsc'
Chunk Offset atom	'stco'
}	
}	
}	
User data atom	'udta'
}	
Track atom (effect) {	'trak'
Track Header atom	'tkhd'
Edit atom {	'edts'
Edit List atom	'elst'
}	
Track Reference atom {	'tref'
Track Reference Type atom	'ssrc'
}	
Media atom {	'mdia'
Media Header atom	'mdhd'
Media Handler Reference atom	'hdlr'
Media Information atom {	'minf'
Video Media Information Header atom	'vmhd'
Data Handler Reference atom	'hdlr'
Data Information atom {	'dinf'
Data Reference atom	'dref'

FIG. 7

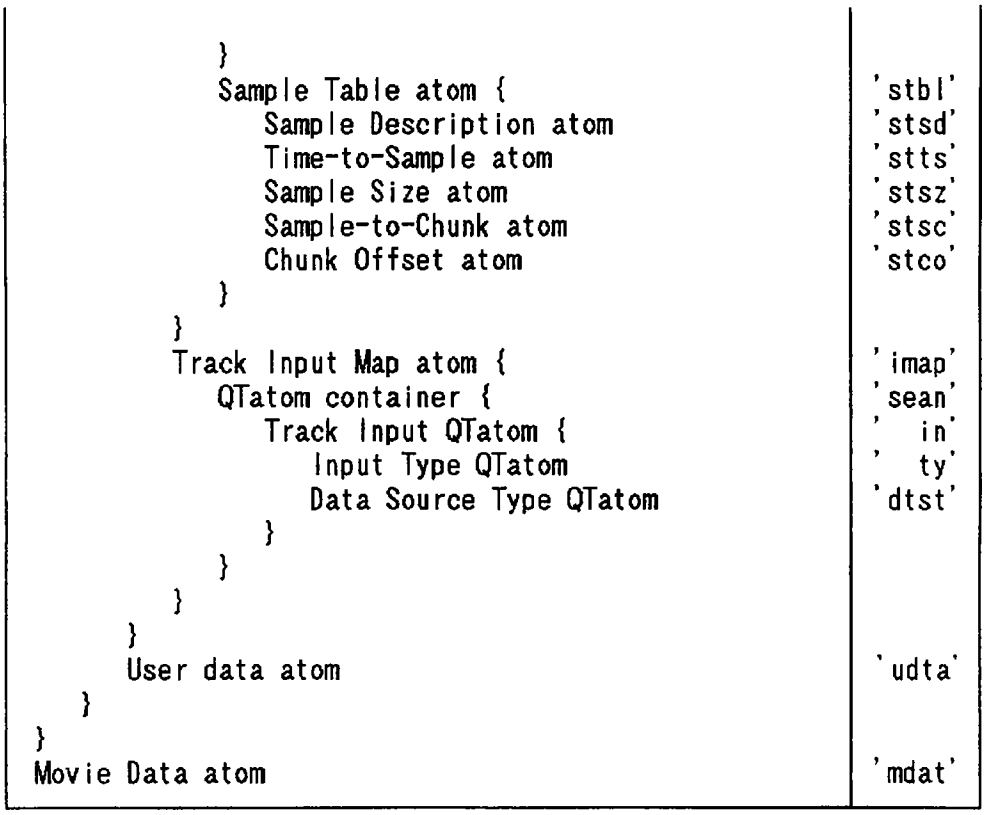

}
Sample Table atom {
Sample Description atom
Time-to-Sample atom
Sample Size atom
Sample-to-Chunk atom
Chunk Offset atom
}
}
Track Input Map atom {
QTatom container {
Track Input QTatom {
Input Type QTatom
Data Source Type QTatom
}
}
}
}
User data atom
}
}
Movie Data atom
'stbl'
'stsd'
'stts'
'stsz'
'stsc'
'stco'
'imap'
'sean'
' in'
' ty'
'dtst'
'udta'
'mdat'

FIG. 8

ATOM	TYPE NAME
Movie atom {	'moov'
Movie Header atom	'mvhd'
Track atom (video 1) {	'trak'
Track Header atom	'tkhd'
Edit atom {	'edts'
Edit List atom	'elst'
}	
Media atom {	'mdia'
Media Header atom	'mdhd'
Media Handler Reference atom	'hdlr'
Media Information atom {	'minf'
Video Media Information Header atom	'vmhd'
Data Handler Reference atom	'hdlr'
Data Information atom {	'dinf'
Data Reference atom	'dref'
}	
Sample Table atom {	'stbl'
Sample Description atom	'stsd'
Time-to-Sample atom	'stts'
Sample Size atom	'stsz'
Sample-to-Chunk atom	'stsc'
Chunk Offset atom	'stco'
}	
}	
}	
User data atom	'udta'
}	

FIG. 9

Track atom (video 2) {	'trak'
Track Header atom	'tkhd'
Edit atom {	'edts'
Edit List atom	'elst'
}	
Media atom {	'mdia'
Media Header atom	'mdhd'
Media Handler Reference atom	'hdlr'
Media Information atom {	'minf'
Video Media Information Header atom	'vmhd'
Data Handler Reference atom	'hdlr'
Data Information atom {	'dinf'
Data Reference atom	'dref'
}	
Sample Table atom {	'stbl'
Sample Description atom	'stsd'
Time-to-Sample atom	'stts'
Sample Size atom	'stsz'
Sample-to-Chunk atom	'stsc'
Chunk Offset atom	'stco'
}	
}	
}	
User data atom	'udta'
}	
Track atom (effect) {	'trak'
Track Header atom	'tkhd'
Edit atom {	'edts'
Edit List atom	'elst'
}	
Track Reference atom {	'tref'
Track Reference Type atom	'ssrc'
}	
Media atom {	'mdia'
Media Header atom	'mdhd'
Media Handler Reference atom	'hdlr'
Media Information atom {	'minf'
Video Media Information Header atom	'vmhd'
Data Handler Reference atom	'hdlr'
Data Information atom {	'dinf'
Data Reference atom	'dref'

FIG. 10

}	
Sample Table atom {	'stbl'
Sample Description atom	'stsd'
Time-to-Sample atom	'stts'
Sample Size atom	'stsz'
Sample-to-Chunk atom	'stsc'
Chunk Offset atom	'stco'
}	
}	
Track Input Map atom {	'imap'
QTatom container {	'sean'
Track Input QTatom {	' in'
Input Type QTatom	' ty'
Data Source Type QTatom	'dtst'
}	
Track Input QTatom {	' in'
Input Type QTatom	' ty'
Data Source Type QTatom	'dtst'
}	
}	
}	
}	
User data atom	'udta'
}	
}	
Movie Data atom	'mdat'

FIG. 11

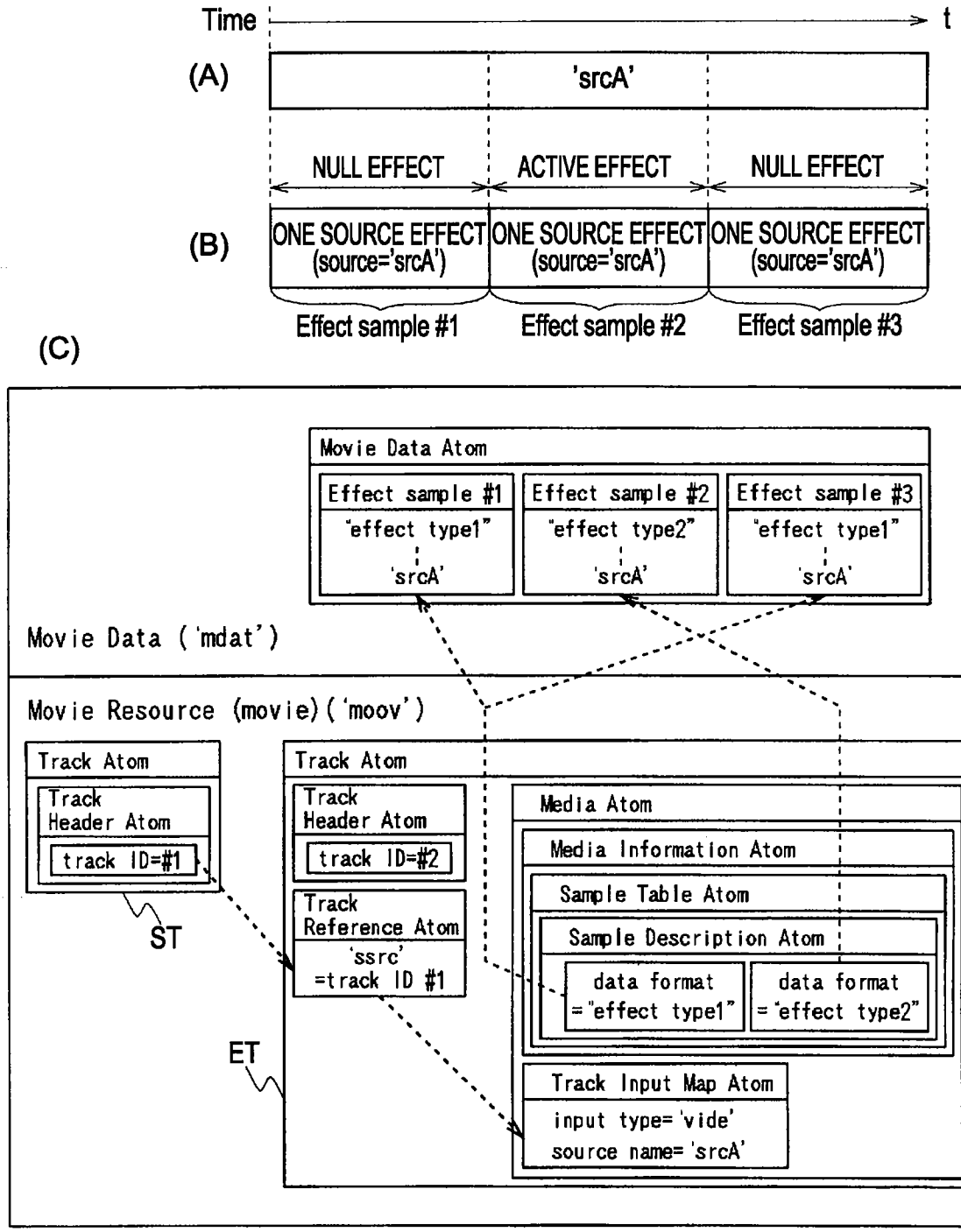
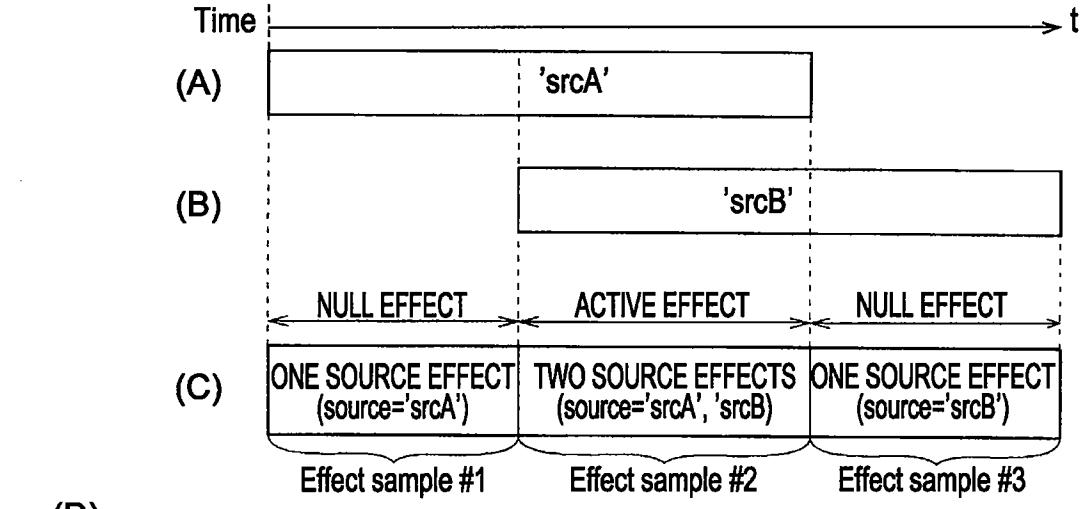

Time
t
(A)
'srcA'
NULL EFFECT
ACTIVE EFFECT
NULL EFFECT
(B)
ONE SOURCE EFFECT (source='srcA')
ONE SOURCE EFFECT (source='srcA')
ONE SOURCE EFFECT (source='srcA')
Effect sample #1
Effect sample #2
Effect sample #3
(C)
Movie Data Atom
Effect sample #1
"effect type1"
'srcA'
Effect sample #2
"effect type2"
'srcA'
Effect sample #3
"effect type1"
'srcA'
Movie Data ('mdat')
Movie Resource (movie) ('moov')
Track Atom
Track Header Atom
track ID=#1
ST
Track Atom
Track Header Atom
track ID=#2
Track Reference Atom
'ssrc'
=track ID #1
ET
Media Atom
Media Information Atom
Sample Table Atom
Sample Description Atom
data format
="effect type1"
data format
="effect type2"
Track Input Map Atom
input type='vide'
source name='srcA'

FIG. 12


Time
t
(A)
'srcA'
(B)
'srcB'
NULL EFFECT
ACTIVE EFFECT
NULL EFFECT
(C)
ONE SOURCE EFFECT (source='srcA')
TWO SOURCE EFFECTS (source='srcA', 'srcB)
ONE SOURCE EFFECT (source='srcB')
Effect sample #1
Effect sample #2
Effect sample #3

(D)

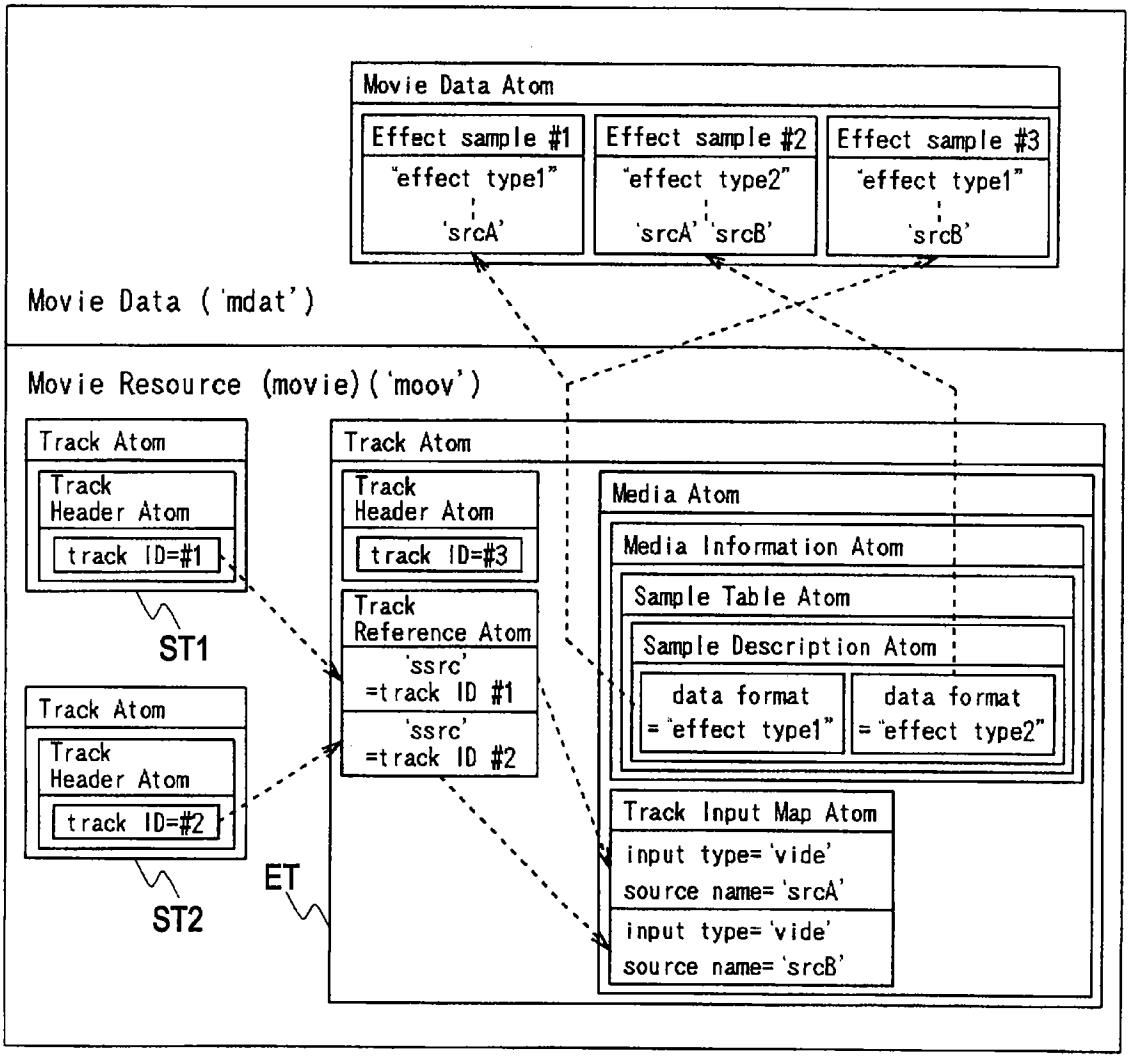

Movie Data Atom
Effect sample #1
"effect type1"
'srcA'
Effect sample #2
"effect type2"
'srcA' 'srcB'
Effect sample #3
"effect type1"
'srcB'
Movie Data ('mdat')
Movie Resource (movie) ('moov')
Track Atom
Track Header Atom
track ID=#1
ST1
Track Atom
Track Header Atom
track ID=#2
ST2
ET
Track Atom
Track Header Atom
track ID=#3
Track Reference Atom
'ssrc' =track ID #1
'ssrc' =track ID #2
Media Atom
Media Information Atom
Sample Table Atom
Sample Description Atom
data format = "effect type1"
data format = "effect type2"
Track Input Map Atom
input type='vide' source name='srcA'
input type='vide' source name='srcB'

FIG. 13

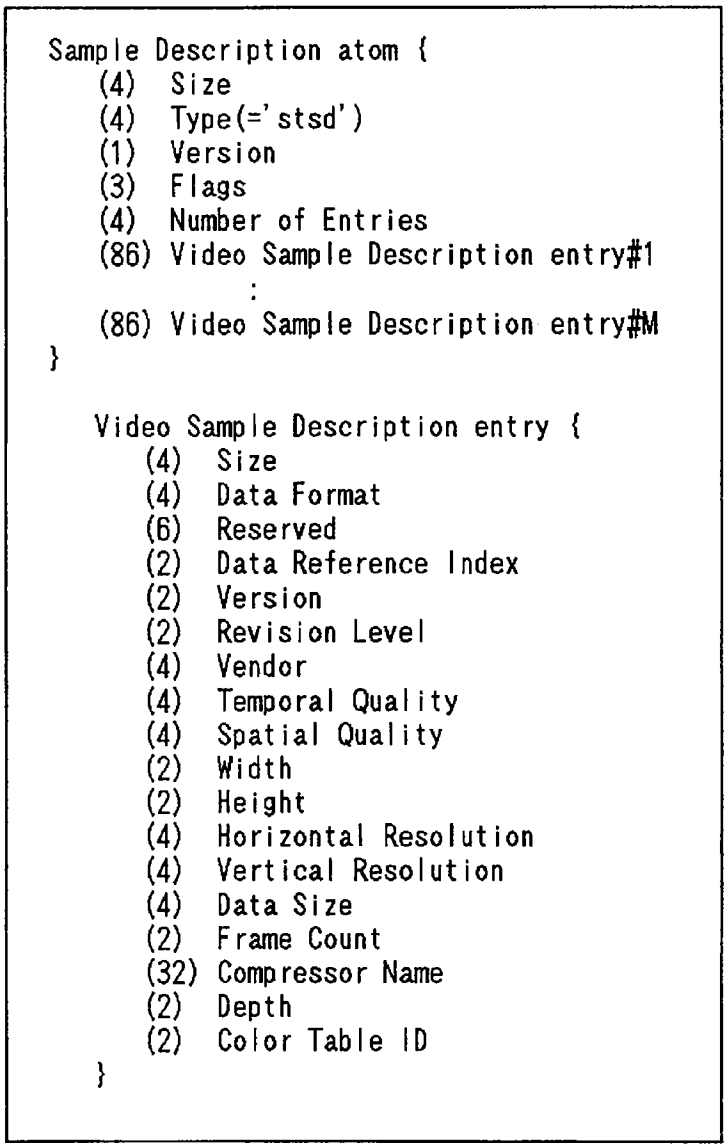

Sample Description atom {
(4) Size
(4) Type('stsd')
(1) Version
(3) Flags
(4) Number of Entries
(86) Video Sample Description entry#1
:
(86) Video Sample Description entry#M
}
Video Sample Description entry {
(4) Size
(4) Data Format
(6) Reserved
(2) Data Reference Index
(2) Version
(2) Revision Level
(4) Vendor
(4) Temporal Quality
(4) Spatial Quality
(2) Width
(2) Height
(4) Horizontal Resolution
(4) Vertical Resolution
(4) Data Size
(2) Frame Count
(32) Compressor Name
(2) Depth
(2) Color Table ID
}

FIG. 14

```
Sample Description atom {
    (4)  Size
    (4)  Type(='stsd')
    (1)  Version
    (3)  Flags
    (4)  Number of Entries
   (112) Effect Sample Description entry#1
              :
   (112) Effect Sample Description entry#M
}

    Effect Sample Description entry {
        (4)  Size
        (4)  Data Format
        (6)  Reserved
        (2)  Data Reference Index
        (2)  Version
        (2)  Revision Level
        (4)  Vendor
        (4)  Temporal Quality
        (4)  Spatial Quality
        (2)  Width
        (2)  Height
        (4)  Horizontal Resolution
        (4)  Vertical Resolution
        (4)  Data Size
        (2)  Frame Count
        (32) Compressor Name
        (2)  Depth
        (2)  Color Table ID
/* Data Format extension atom */
        (26) Stream Descriptor atom
    }
```

FIG. 15

TYPE NAME	EFFECT NAME
'blur'	BLUR
'solr'	COLOR STYLE
'tint'	COLOR TINT
'edge'	EDGE DETECTION
'embs'	EMBOSS
'hslb'	HSL COLOR BALANCE
'rgbb'	RGB COLOR BALANCE
'shrp'	SHARPNESS
'YPST'	POSTERIZATION
'MOSA'	MOSAIC
'NEGA'	RGB REVERSE (NEGATIVE)
'brco'	BRIGHTNESS AND CONTRAST
'ckey'	CHROMAKEY
'dslv'	CROSS FADE
'push'	PUSH
'slid'	SLIDE
'RDOT'	RANDOM DOT
'blnd'	ALPHA BLENDING
'zoom'	ZOOM
'smpt'	SMPTE WIPE
'smp2'	SMPTE IRIS
'smp3'	SMPTE RADIAL
'smp4'	SMPTE MATRIX
'UDEF'	USER DEFINED EFFECT

FIG. 16

```
Stream Descriptor atom {
    (4)  Size
    (4)  Type(='strd')
    (1)  Version
    (3)  Flags
    /* Data Format specific data */
    (4)  Data Format
    (4)  User Defined Effect Type
    (2)  Parameter Flag
```

FIG. 17

```
User Defined Effect Type {
        (2)  Owner ID
        (2)  Effect ID
    }
```

FIG. 18

Bit	FLAG NAME	VALUE	DESCRIPTION
15:1	reserved	0	
0	Effect presentation effectiveness	1	EFFECT OF CORRESPONDING EFFECT SAMPLE ENTRY IS ENABLED (ACTIVE EFFECT)
		0	EFFECT OF CORRESPONDING EFFECT SAMPLE ENTRY IS DISABLED (ACTIVE EFFECT)

FIG. 19

EFFECT NAME (TYPE NAME)	PARAMETER	TYPE NAME
Blur filter ('blur')	Amount of blurring	'ksiz'
Color Style ('solr')	Solarize amount	'solr'
	Solarize point	'solp'
	Posterize amount	'post'
Color Tint filter ('tint')	Tint	'tint'
	Dark color	'back'
	Light color	'fore'
	Brightness	'brig'
	Contrast	'cont'
	Amount	'amnt'
Edge Detection filter ('edge')	Edge thickness	'ksiz'
	Colorize	'colz'
Emboss filter ('embs')	Amount of embossing	'ksiz'
HSL Balance filter ('hslb')	Hue multiplier	'hmul'
	Saturation multiplier	'smul'
	Lightness multiplier	'vmul'
RGB Balance filter ('rgbb')	Red multiplier	'rmul'
	Green multiplier	'gmul'
	Blue multiplier	'bmul'
Sharpen filter ('shrp')	Amount of sharpening	'ksiz'
Posterization ('YPST')	Y-bit adjustment	'YBIT'
Mosaic ('MOSA')	Horizontal size	'MHSZ'
	Vertical size	'MVSZ'
	Amount	'amnt'
RGB Reverse ('NEGA')	none	none
Brightness and Contrast ('brco')	Brightness	'bryt'
	Contrast	'cntr'
SMPTE Wipe effects ('smpt')	Percentage	'pcnt'
	Wipe ID	'wpID'
	Soft border	'soft'
	Border width	'widt'
	Border color	'bclr'
	Horizontal repeat	'hori'
	Vertical repeat	'vert'

FIG. 20

SMPTE Iris effects ('smp2')	Percentage	'pcnt'
	Wipe ID	'wpID'
	Soft border	'soft'
	Border width	'widt'
	Border color	'bclr'
	Horizontal repeat	'hori'
	Vertical repeat	'vert'
SMPTE Radial effects ('smp3')	Percentage	'pcnt'
	Wipe ID	'wpID'
	Soft border	'soft'
	Border width	'widt'
	Border color	'bclr'
	Horizontal repeat	'hori'
	Vertical repeat	'vert'
SMPTE Matrix effects ('smp4')	Percentage	'pcnt'
	Wipe ID	'wpID'
	Soft border	'soft'
	Border width	'widt'
	Border color	'bclr'
	Horizontal repeat	'hori'
	Vertical repeat	'vert'
Chroma Key ('ckey')	Key color	'keyc'
Cross Fade ('dslv')	Percentage	'pcnt'
Push ('push')	Percentage	'pcnt'
	From direction	'from'
Slide ('slid')	Percentage	'pcnt'
	Slide angle	'angl'
Random Dot ('RDOT')	Horizontal size	'DHSZ'
	Vertical size	'DVSZ'
	Percentage	'pcnt'
Alpha Compositor ('blnd')	Blend mode	'bMod'
Zoom ('zoom')	Percentage	'pcnt'
	Centre X	'xcnt'
	Centre Y	'ycnt'
	Zoom variation	'zvar'
	Zoom distance	'zdst'

FIG. 21

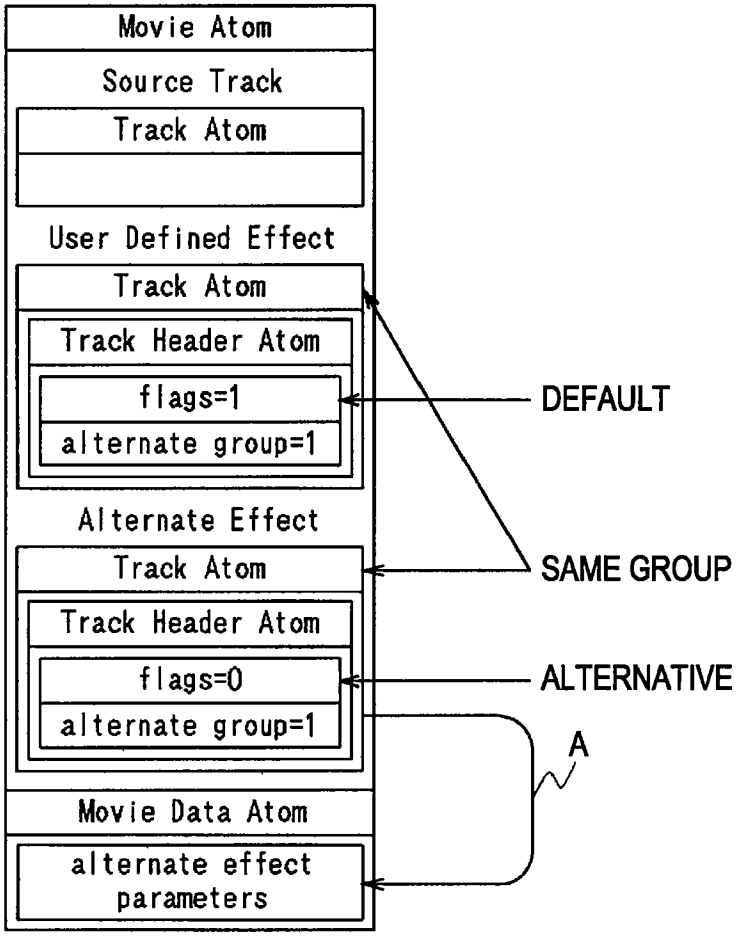

Movie Atom
Source Track
Track Atom
User Defined Effect
Track Atom
Track Header Atom
flags=1
alternate group=1
Alternate Effect
Track Atom
Track Header Atom
flags=0
alternate group=1
Movie Data Atom
alternate effect parameters
DEFAULT
SAME GROUP
ALTERNATIVE
A

FIG. 22

Syntax	No. of bits
Track Header Atom {	
Size	32
Type = 'tkhd'	32
Version	8
Flags	24
Creation Time	32
Modification Time	32
Track ID	32
Reserved = 0	32
Duration	32
Reserved = 0	32*2
Layer	16
Alternate Group	16
Volume	16
Reserved = 0	16
Matrix Structure	32*9
Track Width	32
Track Height	32
}	

FIG. 23

Syntax	No. of bits
User Data Atom {	
Size	32
Type = 'udta'	32
/*user_data list*/	
UD AV Descriptor Atom	
}	

FIG. 24

Syntax	No. of bits
UD AV Descriptor Atom {	
Size	32
Type = 'mqds'	32
Track Property Atom	
}	

FIG. 25

Syntax	No. of bits
Track Property Atom {	
Size	32
Type = 'tkpt'	32
Version	8
Flags	24
Presentation Type	32
Priority	32
}	

FIG. 26

Value	Description
'orig'	Original Track
'efct'	Effect Track

FIG. 27

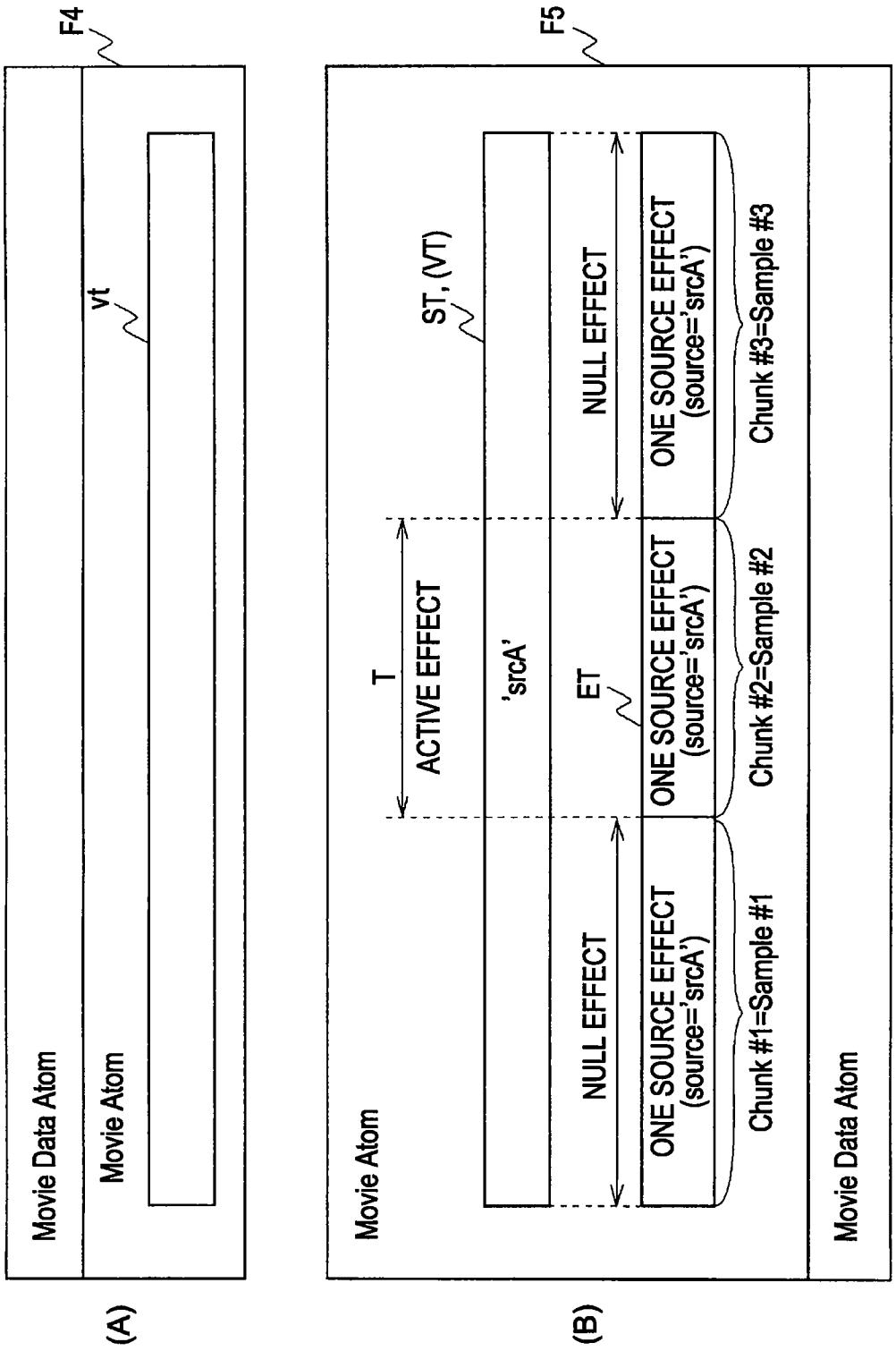

(A)
F4
Movie Data Atom
Movie Atom
vt
(B)
F5
Movie Atom
ST, (VT)
T
ACTIVE EFFECT
'srcA'
ET
NULL EFFECT
ONE SOURCE EFFECT
(source='srcA')
Chunk #1=Sample #1
Chunk #2=Sample #2
Chunk #3=Sample #3
Movie Data Atom

FIG. 28

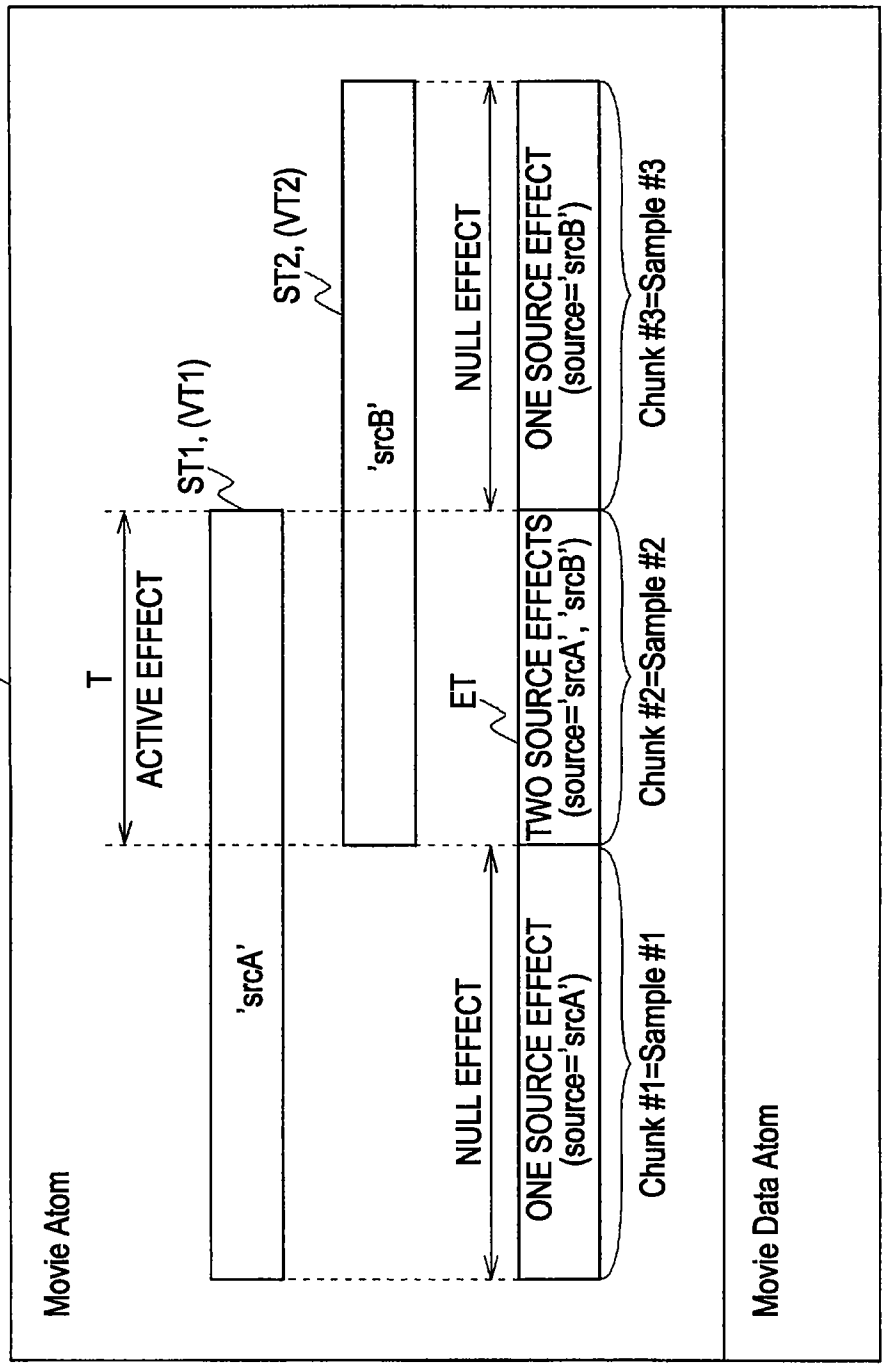
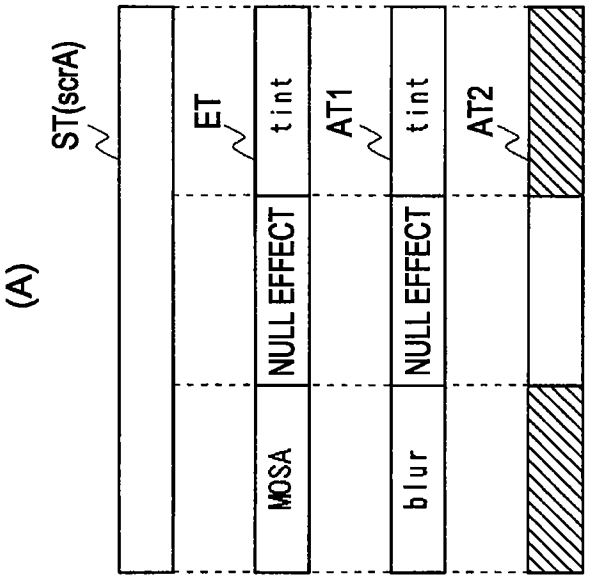

F6
Movie Atom
T
ACTIVE EFFECT
ST1, (VT1)
ST2, (VT2)
'srcA'
'srcB'
NULL EFFECT
ET
NULL EFFECT
ONE SOURCE EFFECT (source='srcA')
TWO SOURCE EFFECTS (source='srcA', 'srcB')
ONE SOURCE EFFECT (source='srcB')
Chunk #1=Sample #1
Chunk #2=Sample #2
Chunk #3=Sample #3
Movie Data Atom

FIG. 29

(A)



(B)

TRACK	Header Atom			User Data Atom	
	Flags	Alternate Group	Layer	Presentation Type	Priority
ST	1	0	0	orig	1
ET	1	1	1	efct	2
AT1	0	1	1	efct	3
AT2	0	1	1	efct	4

FIG. 30

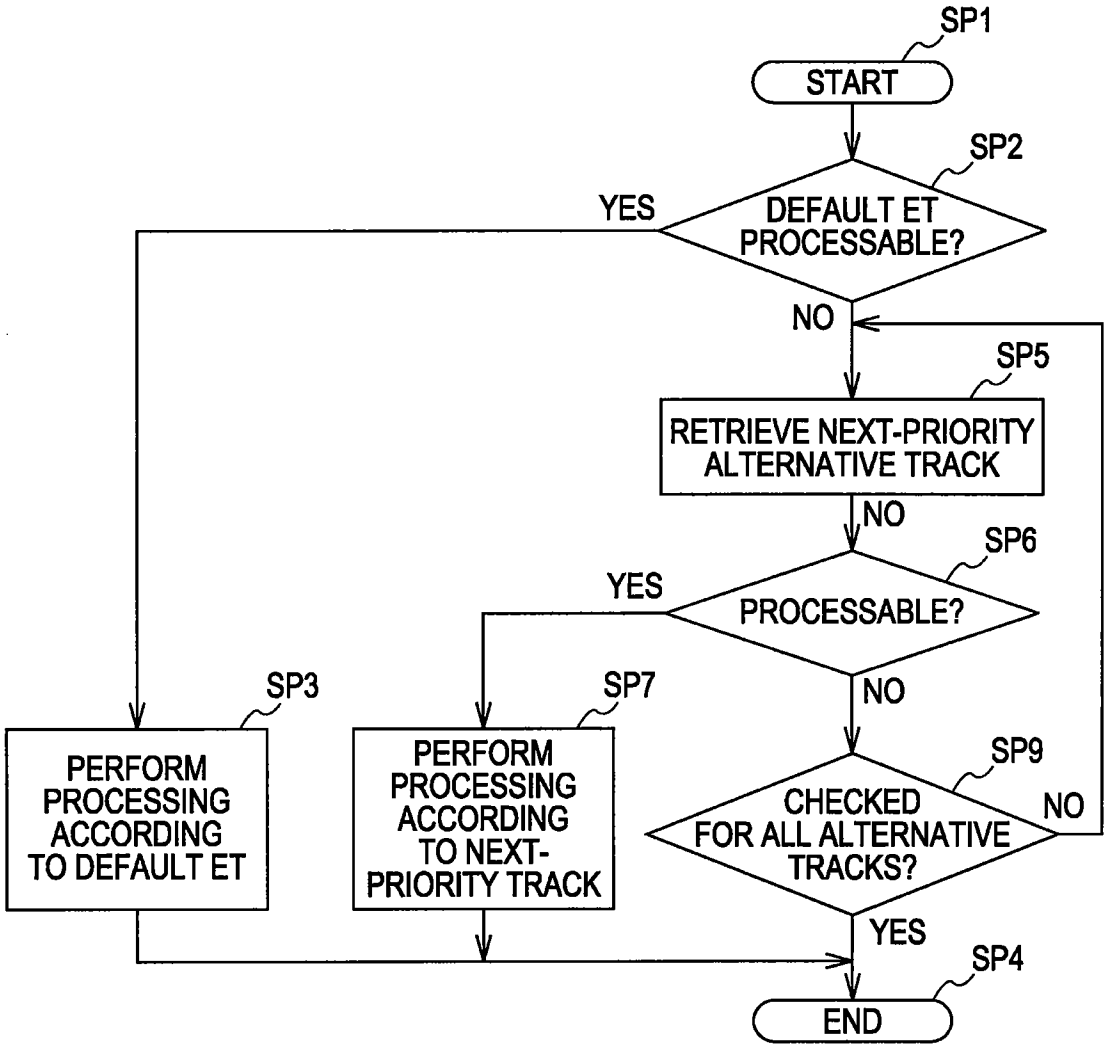
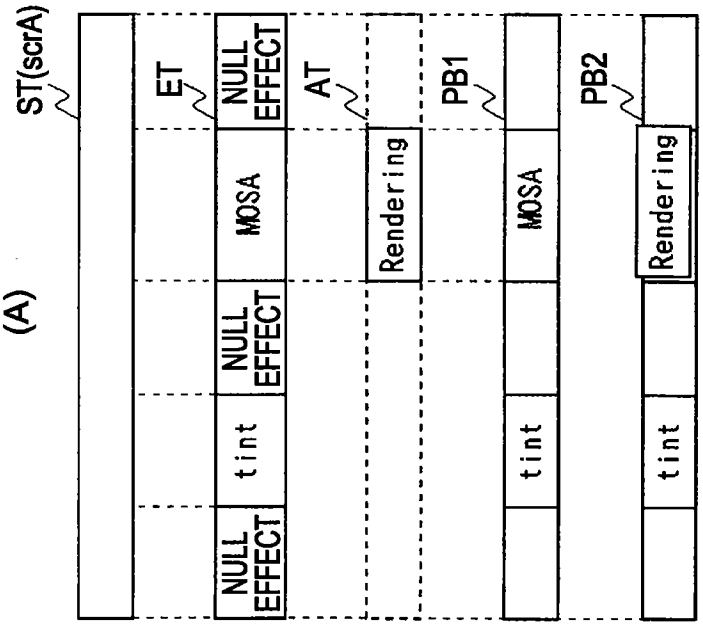

SP1
START
SP2
DEFAULT ET PROCESSABLE?
YES
NO
SP5
RETRIEVE NEXT-PRIORITY ALTERNATIVE TRACK
NO
SP6
PROCESSABLE?
YES
NO
SP3
PERFORM PROCESSING ACCORDING TO DEFAULT ET
SP7
PERFORM PROCESSING ACCORDING TO NEXT-PRIORITY TRACK
SP9
CHECKED FOR ALL ALTERNATIVE TRACKS?
NO
YES
SP4
END

FIG. 31

(A)

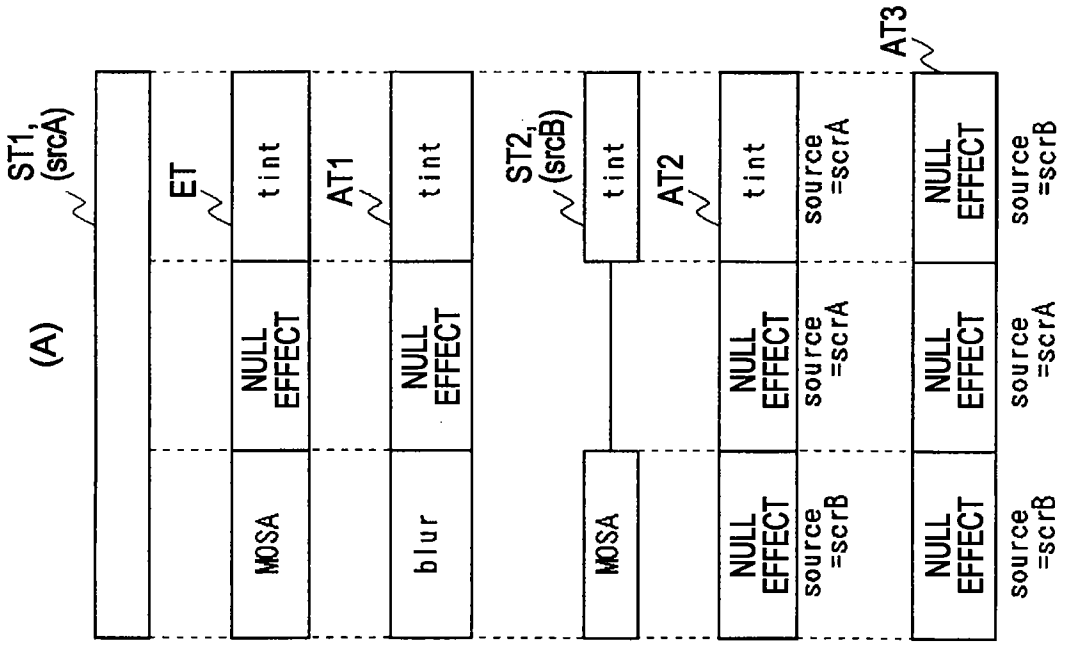


(B)

TRACK	Header Atom			User Data Atom	
	Flags	Alternate Group	Layer	Presentation Type	Priority
ST	1	0	0	orig	1
ET	1	1	-1	efct	2
AT	1	0	-2	efct	3

FIG. 32

(A)



(B)

TRACK	Header Atom			User Data Atom	
	Flags	Alternate Group	Layer	Presentation Type	Priority
ST1	1	0	0	orig	1
ET	1	1	-1	efct	2
AT1	0	1	-1	efct	3
ST2	1	0	1	orig	1
AT2	0	1	-1	efct	4
AT3	0	1	-1	efct	5